

REMARKS

In response to the Office Action mailed July 22, 2003, Applicants respectfully request reconsideration. To further the prosecution of this application, each of the rejections made in the Office Action is addressed herein.

Claims 2-38, 40-70, and 72 are pending in this application, of which claims 8, 19, 42, 43, 44, 45, 49, 52 and 53 are independent claims. By this Amendment, Applicants have amended claims 42-45, 49 and 53 solely to address minor informalities (some of which were noted in the Office Action). No claims have been amended herein to overcome rejections based on cited art; rather, Applicants have provided arguments as set forth below to overcome the rejections. The application as now presented is believed to be in allowable condition.

A. Rejections Under 35 U.S.C. §112

Claims 40-51 were rejected under 35 U.S.C. §112 for minor informalities relating to the designation of acts in method claims. The amendments herein are believed to address the issues noted in the Office Action.

B. Claim Rejections Under 35 U.S.C. §103

Claims 2-39, 40-70 and 72 were rejected under 35 U.S.C. §103(a) as allegedly being obvious over Belliveau, et al. (U.S. Patent No. 4,962,687). Applicants respectfully traverse these rejections. Since claim 39 was cancelled in a previous amendment, this rejection is moot with respect to this claim.

Applicants' claim 8 is directed to an apparatus, comprising at least one light source adapted to be supported by one of a pool and a spa to illuminate a liquid contained in the one of the pool and the spa. The at least one light source is further adapted to generate a remotely controllable variable color radiation output to illuminate the liquid *without requiring the use of a color filter*. The at least one light source includes at least one input to receive at least one external signal, and is adapted such that at least a color of the variable color radiation output is controlled based on the at least one external signal.

Each of Applicants' other independent claims 19, 42, 43, 44, 45, 49 and 52 also recites variable color radiation that is generated without requiring the use of a color filter.

In contrast to Applicants' claims, Belliveau completely fails to disclose or suggest a light source that is adapted to generate variable color radiation without requiring the use of a color filter. In fact, it is significantly noteworthy that precisely the opposite is true; namely, an essential component of Belliveau's apparatus necessarily includes one or more color filters to generate colored light. Hence, Belliveau teaches away from the concept of generating variable color radiation without requiring the use of a color filter.

On page 3, the Office Action contends that Belliveau discloses a light source adapted "to illuminate the light [sic] without requiring the use of a color filter" in col. 2, line 30 of Belliveau's disclosure. This assertion is incorrect. In the cited passage, Belliveau indicates that "[i]t is therefore a primary object of the present invention to provide a novel and improved variable color lighting system without moving parts which provides a smooth, rapid selection of color without chopping or flickering between color changes." Again, there is no mention or suggestion in this passage, or anywhere else in the Belliveau disclosure, of generating variable color radiation without requiring the use of one or more color filters. That Belliveau necessarily requires color filters to produce multicolor light is evident in the figures and descriptions thereof, summarized as follows.

Belliveau is directed to a variable color lighting system including multiple lamps, or lighting fixtures, controlled by a central controller. As illustrated in Fig. 1 of Belliveau, a central controller 12 is connected to each of a plurality of lighting fixtures 16 (only one of which is shown in the figure) by a number of data links 14 (col. 3, lines 48-54). The central controller includes a control panel 18 having a variety of buttons, knobs and indicators to facilitate various control and status functions (col. 3, lines 55-58; col. 4, lines 11-47).

In Belliveau, each lighting fixture 16 includes three light sources that individually provide a red, green or blue light, as well as dichroic mirrors and lens arrays to provide a combined, colored beam along a projection axis (col. 3, lines 64-68). In particular, one of ordinary skill in the art would readily recognize the individual light sources of the lighting fixture 16 to be three incandescent white light sources each used in combination with a particular color filter (e.g., red, green and blue); more specifically, one of ordinary skill in the art would readily appreciate that a dichroic mirror provides a wavelength selection function for radiation impinging upon the mirror in that it is generally designed to reflect one color of light while passing a different color of light.

This interpretation further is corroborated in the background section of Belliveau, in which prior art optical systems similarly are described as combining white light sources with dichroic mirrors and/or color filters to provide red, green and blue light beams (col. 1, lines 15-30). In view of the foregoing, a conventional (i.e., white) light source alone, given the context of Belliveau, is insufficient for implementing the function of providing colored light; rather, a light source must be adapted in Belliveau, i.e. used in combination with one or more dichroic mirrors or color filters, to accomplish this function.

Belliveau's light sources, first discussed in connection with Fig. 1, are further discussed in column 8, lines 10-30, with reference to Fig. 4 (in which the light sources are indicated as lamps 122). In this passage, each of three lamps is described as receiving power from an associated triac switch (col. 8, lines 23-24). Each triac switch is in turn controlled to periodically conduct power so as to vary an intensity of the light generated by the corresponding lamp to which it is coupled (col. 8, lines 25-30). Beyond this, there is no other discussion in Belliveau regarding any particular structure associated with the light sources or lamps of the disclosed lighting system.

As mentioned above, Belliveau discusses in its background section a number of prior art lighting devices for generating colored light (col. 1, line 15 – col. 2, line 27). All of these colored light prior art devices include incandescent white light sources (i.e., conventional light bulbs) that are designed to draw power from a standard AC (alternating current) voltage source (i.e., 120 Vrms at 60 Hz). The incandescent white light sources are used in combination with color filters to provide different colors of light other than white light. Only one of the prior art references discussed in the background, U.S. Patent 4,635,052 to Aoike, instead discusses discharge fluorescent lamps, but is distinguished from the other prior art references in that it relates to a black and white video display rather than a colored lighting device.

Like the apparatus disclosed in Belliveau, many of the colored light prior art devices discussed in the background of Belliveau also employ a triac or silicon controlled rectifier (SCR) to control an intensity of light generated by an incandescent light source. In particular, the triac or SCR governs the phase angle of an AC power signal at which the light source is allowed to conduct current. In this manner, the intensity of light generated by the incandescent source is proportional to the average power drawn by the source via the triac or SCR.

That phase-angle controlled incandescent white light sources are discussed in the background of Belliveau in connection with prior art colored light systems is completely consistent with the subject matter of the invention disclosed in Belliveau; namely, a variable color lighting system in which the intensity of light generated by a light source is controlled via a triac. It is well known in the art that triacs are designed and employed specifically as AC current switches (a triac is a bidirectional three-terminal thyristor, or “triode;” hence the name triac, or *triode ac switch*). A triac can switch current in either direction (i.e., alternating current) by applying a low-voltage, low-current control signal of either polarity between its gate terminal and one of its two other terminals. By adjusting the gate current, the phase angle at which the triac conducts current may be varied (often referred to as “angle modulation”), thus varying the average power applied to an AC compatible device driven by the triac (e.g., an incandescent light source).

This is precisely the scenario described in the only structure disclosed in the detailed description of Belliveau; i.e., a light source or lamp of a lighting fixture receives power from a triac that is operated via a control signal to periodically conduct current from an AC power source, so as to control an intensity of light generated by the corresponding lamp (col. 8, lines 23-30). It necessarily follows that the light sources or lamps of the lighting fixture of the ‘687 patent are devices that must be compatible with a standard AC power source; ergo, incandescent light sources. Hence, there is much in Belliveau to compel the conclusion that the disclosed light sources are incandescent white light sources used with color filters, and absolutely nothing in Belliveau to contradict such a conclusion.

Accordingly, since each of Applicants’ independent claims 8, 19, 42, 43, 44, 45, 49, and 52 recite, *inter alia*, variable color radiation that is generated without requiring the use of a color filter, these claims patentably distinguish over Belliveau and are in condition for allowance. Therefore, the rejections of these claims under 35 U.S.C. §103(a) as allegedly being obvious over Belliveau should be withdrawn.

Claims 2-7, 9-18, 20-38, 40-41, 46-47, 50-51 and 72 depend from one of claims 8, 19, 42, 43, 44, 45, 49, and 52 and are allowable based at least upon their dependency.

Independent claim 53 is directed to an apparatus, comprising at least one remote user interface to remotely control at least one light source adapted to be supported by one of a pool

and a spa. The at least one light source further is adapted to generate variable color radiation to illuminate a liquid contained in the one of the pool and the spa. The at least one remote user interface comprises at least two selectors to allow a user to remotely control at least one parameter associated with the variable color radiation generated by the at least one light source.

Belliveau fails to disclose or suggest the apparatus of Applicants' claim 53. For example, Belliveau completely fails to disclose or suggest one or more light sources that are adapted to be supported by one of a pool and a spa to illuminate a liquid contained in the pool or spa.

The Office Action acknowledges, on page 3, that Belliveau differs from the claimed invention in that Belliveau is silent with respect to pool or spa related applications. The Office Action contends, though, that Belliveau's system "can be provided in pool [sic] and aquarium with special water sealing to prevent the short circuit of the system." However, the Office Action completely fails to provide any basis, in the Belliveau reference itself or in the knowledge generally available to one of ordinary skill in the art, for such a modification to Belliveau.

As set forth in MPEP §2143, three criteria must be met in order to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the cited references or to combine reference teachings. Second, there must be a reasonable expectation of success. The teaching or suggestion to modify the references or to combine reference teachings, as well as the reasonable expectation of success, must both be found in the prior art and not based on Applicants' disclosure. Third, the prior art references, when viewed as a whole, must teach or suggest all of the claimed features.

Neither Belliveau nor any other reference of record provides any teaching, suggestion, or motivation to modify Belliveau in any manner. Moreover, the Office Action fails to specify any reasonable or compelling motivation to modify Belliveau, and completely fails to discuss the reasonable expectation of success in making any such modification.

Instead, as discussed above, the Office Action merely summarily states that allegedly it would have been obvious to modify Belliveau for use in a pool or aquarium. However, the Office Action fails to specify any indication, either in the references themselves or in the knowledge generally available in the art, why one of ordinary skill would reasonably expect to

be successful in modifying Belliveau. Thus, the Examiner has failed to meet his burden of establishing a *prima facie* case of obviousness.

Additionally, Applicants' respectfully traverse any assertion that any prior art exists that would have provided motivation for such a modification to Belliveau. Accordingly, if the Examiner wishes to maintain any rejection of the claims based at least in part on allegedly well-known teachings or knowledge in the art, the Examiner is respectfully requested to cite a reference in support of his position as required under MPEP §2144.03. Alternatively, if the Examiner is relying upon facts within his personal knowledge, the Examiner is respectfully requested to file an affidavit establishing those facts pursuant to MPEP §2144.03.

In view of the foregoing, the rejection of claim 53 under 35 U.S.C. §103(a) as allegedly being obvious over Belliveau should be withdrawn.

Claims 54-70 depend from claim 53 and are allowable based at least upon their dependency.

C. Other Issues

The Examiner's attention is directed to item 10 on the Office Action Summary sheet, which should be checked to indicate the filing of formal drawings on May 14, 2002. Additionally, an initialed copy of the 1449 Form accompanying an IDS filed on April 10, 2003 (first listed reference to Evans, U.S. Patent No. 4,305,117) was not included with the Office Action. The Applicants respectfully request the Examiner to forward an initialed copy of this 1449 Form to the Applicants' representatives at the Examiner's earliest convenience.

Conclusion

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,

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